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RESEARCH PAPER

# Under-recognition and under-treatment of DSM-IV classified mood and anxiety disorders among disability claimants

Bert Cornelius[1,2,3], Jac J. L. van der Klink[1,2], Sandra Brouwer[1,2], and Johan W. Groothoff[1]

[1]*Department of Health Sciences, Community and Occupational Medicine, University Medical Center Groningen, University of Groningen, The Netherlands,* [2]*Research Center for Insurance Medicine, AMC-UMCG-UWV-VU University Medical Center, Amsterdam, The Netherlands, and* [3]*Social Security Institute, Amsterdam, The Netherlands*



**Abstract**

*Purpose*: This study aimed to examine under-recognition, under-treatment and severity of under-treated DSM-IV mood and anxiety disorders among disability claimants. *Methods*: In a representative sample of Dutch disability claimants ($n = 346$), registry codes certified according to the International Classification of Diseases 10th edition (ICD-10) by insurance physicians, were compared with classifications according to the Diagnostic Statistical Manual of Mental Disorders (DSM-IV) detected by the Composite International Diagnostic Interview (CIDI). Levels of ICD-10/DSM-IV agreement were assessed for mood and anxiety disorders in the total sample, and prevalence of recent DSM-IV mood and anxiety disorders in a pure ICD-10 somatic subgroup. Treatment and severity of under-treated DSM-IV mood and anxiety disorders were assessed in two subgroups of disability claimants with either an ICD-10 somatic or mental disorder as primary cause of disability, irrespective of any ICD-10 comorbidity. *Results*: Levels of ICD-10/DSM-IV agreement were poor ($\kappa$: 0.237 for mood and 0.260 for anxiety disorders). In the pure ICD-10 somatic subgroup, the prevalence of DSM-IV mood and anxiety disorders was 3.8% and 11.4%, respectively. In the ICD-10 somatic subgroup irrespective of any ICD-10 comorbidity, 45.2% (major depressive disorder), 80.0% (social phobia) and 53.3% (general anxiety disorder) were under-treated. In the ICD-10 mental subgroup, these percentages were 44.7%, 80.9% and 33.4%, respectively. In both of these subgroups, under-treated DSM-IV mood and anxiety disorders were predominantly serious in terms of impairment and disability. *Conclusions*: Serious mental disorders were found to be substantially under-diagnosed and under-treated among disability claimants. To optimize diagnosis and treatment of disabling mental disorder, medical professionals in insurance, occupational and in the health care sector should closely collaborate. For claimants with under-treated mental disorders, tailor-made multidisciplinary interventions are needed to promote return to work and to prevent permanent disability.

**➤ Implications for Rehabilitation**

- To promote rehabilitation of disability claimants with mental disorders, insurance physicians should closely collaborate with professionals in primary, secondary and occupational health care.
- To rehabilitate claimants with hitherto under-diagnosed and under-treated serious mental disorders, tailor-made multidisciplinary interventions are needed.
- These multidisciplinary interventions should involve professionals in mental health care, occupational and revalidation medicine, and should be aimed at improvement of mental health, functioning and return-to-work.

**Keywords**

Anxiety disorder, diagnosis, disability claimants, mood disorder, treatment

**History**

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## Introduction

The societal burden due to poor mental health in high-income countries is generally assumed to be underestimated, because population-based studies in these countries have shown that a considerable number of serious cases are not treated [1–3]. Large-scale epidemiological studies revealed widespread under-recognition and under-treatment of mental disorders in healthcare settings [4]. These studies showed that only 54–58% of depressed patients were recognized as cases by their general practitioner and that only 15–26% were given a specific diagnosis of depression. Treatment of mood and anxiety disorders often was inappropriate, even when cases were recognized.

Few studies deal with under-treatment of mental disorders in occupational settings, i.e. among sick listed workers. In the Dutch

Address for correspondence: Bert Cornelius, MD, Department of Health Sciences, Community and Occupational Medicine, University Medical Center Groningen, University of Groningen, Antonius Deusinglaan 1, Building 3217, room 620, 9713 AV Groningen, The Netherlands. Tel: +31 503632857/503632860. E-mail: l.r.cornelius@planet.nl

survey Nemesis I, a subgroup of workers was studied [5]. In this subgroup, sickness absence was found to be strongly related to non-treatment: almost 25% of workers sick listed due to a pure mental disorder did not seek help; of those sick listed with a somatic disorder and a co-occurring mental disorder, more than 40% did not seek treatment. Inadequate medical diagnosis and non-treatment of mental disorder in occupational settings lengthens the duration of sickness absence and time to return to work [6–10], and in the end may result in long-term or even permanent work disability.

In social security systems worldwide, medical doctors, i.e. insurance physicians (IPs), assess medical aspects of disability benefit claims, such as diagnosis and treatment of the disabling disorder [11]. Studies on under-recognition and under-treatment in disability assessment settings are scarce. In a recent Dutch study among persons with long-term work disability due to mental health problems, levels of agreement between diagnoses of mental disorder certified by IPs and recent mental disorders classified according to the 4th edition of the Diagnostic Statistical Manual of Mental Disorders (DSM-IV) [12] were found to be very low (Cohens $\kappa < 0.23$), indicating substantial under-diagnosis by IPs assessing the disability benefit claim [13]. A Norwegian study reported that more than 30% of persons being awarded disability pension involving mental illness never had treatment for any mental health problem [14]. Under-treatment may not be a serious problem, because many untreated mental disorders might be mild or self-limiting [15]. However, mental health problems related to long-term sickness absence and disability are likely to be serious. To our knowledge, severity of under-treated mental disorders in disability settings has not been investigated as yet.

The aim of this study was to examine under-recognition, under-treatment and severity of under-treated mental disorders classified according to the DSM-IV among persons claiming disability benefit after two years of sickness absence.

## Method

### Setting and procedures

This study is a cross-sectional study among persons claiming disability benefit two years after the onset of sickness absence. Claimants eligible to participate in the present study were recruited from the registry of the Dutch Social Security Institute (SSI) at the local SSI office in the city of Groningen. This office services Groningen and Drenthe, two northern provinces of the Netherlands. Recruitment started at October 1st 2008 and ended at 31st December 2009. All participants were measured after medical aspects of their disability claim was assessed by IPs, but before the SSI had decided whether or not to award disability benefit. The Medical Ethics committee of the University Medical Center Groningen, the Netherlands, approved recruitment, consent and field procedures.

### Measures

*ICD-10 classified disorders*

In the Dutch social security system, medical aspects of sickness absence are assessed by occupational physicians. Only after two years of continuous sick leave, one can apply for disability benefit. Medical aspects of disability are then assessed by IPs employed by the SSI in face-to-face interviews and examinations. For their assessment of diagnosis and treatment of the disorder(s) as cause for disability, IPs rely in part on historic and actual medical data provided by occupational physicians. The SSI registry allows one diagnosis code for any (somatic or mental) disorder as primary cause of disability, and two additional codes for any comorbid disorders as secondary or tertiary cause of disability. For example, a claimant may be certified with myocardial infarction as primary diagnosis, panic disorder as secondary diagnosis and hypertension as tertiary diagnosis. To classify somatic and mental disorders, IPs use a classification system derived from the International Classification of Diseases 10th edition (ICD-10) [16] and developed for use in occupational health and social security in the Netherlands [17]. To assess prevalence, we obtained ICD-10 codes of somatic and mental disorder certified as primary, secondary or tertiary cause for disability by IPs assessing the disability benefit claim of respondents. For this study, we included all ICD-10 codes for somatic disorders (Chapters I to IV and VI to XXI). Of ICD-10 mental disorder (Chapter V), we included mood disorders (manic episode F30.9, depressive episode F32.9, bipolar affective disorder F31.9, dysthymia F34.1, other depressive disorder F39) and anxiety disorders (posttraumatic stress disorder F43.1, panic disorder F41.0, generalized anxiety disorder F41.1, agoraphobia F40.0, social phobia F40.1, obsessive compulsive disorder F42.9, other anxiety disorder F41.9).

*DSM-IV classified mental disorders*

All respondents were face-to-face interviewed at their home, using the Dutch translation of the World Mental Health (WMH) version 3.0 of the World Health Organization (WHO) *Composite International Diagnostic Interview* (WMH-CIDI) [18]. The CIDI is a laptop-assisted fully structured interview to be administered by lay interviewers and the state-of-the-art instrument of choice in psychiatric epidemiological research, generating DSM-IV and ICD-10 classifications of mental disorders. The validity of the CIDI in assessing mental disorders is generally good, as compared with structured diagnostic interviews administered by clinicians [19]. For this study, we included the sections Depression (major depressive disorder, dysthymia, bipolar disorder), Mania, Panic Disorder, Social Phobia, Agoraphobia (with or without Panic Disorder), Generalized Anxiety Disorder, Obsessive Compulsive Disorder, Posttraumatic Stress Disorder, Suicidality and Psychosis screen. The DSM-IV classification system and its expression in algorithms of the CIDI include a number of hierarchical rules. This rule entails that in the presence of a disorder, a concomitant less pervasive disorder would not be diagnosed. In assessing prevalence and comorbidity, we did not apply any hierarchical rules, allowing to record all the diagnoses whose criteria were met by each respondent. Twelve interviewers were trained by certified CIDI-trainers. Quality of interviewing techniques was evaluated bimonthly in training sessions.

*Under-recognition*

We examined under-recognition of mental disorder among disability claimants in two samples. First, in the total study sample, we assessed agreement between DSM-IV and mental ICD-10 classifications of mood and anxiety disorders. For this assessment, we compared prevalence of 30-day DSM-IV classified mood and anxiety disorders with ICD-10 classified mood and anxiety disorders, certified by IP's assessing the disability claim as primary, secondary or tertiary cause of disability. For a valid comparison of DSM-IV with ICD-10 classifications, the assessment of present state conditions is needed, both in the DSM-IV and the ICD-10 classification system. Therefore, we used 30-day (instead of 12-month) DSM-IV classifications. We considered mental disorder to be under-recognized when levels of agreement between ICD-10 and DSM-IV classifications were poor ($\kappa < 0.40$) and/or, using the CIDI as gold standard, prevalence of false-negative ICD-10 classifications was high. Second, we assessed the prevalence of 30-day DSM-IV mental disorder in a subgroup of respondents with only (an) ICD-10 somatic disorder(s) as primary (or additionally as secondary and tertiary) cause of disability, i.e.

without any ICD-10 mental disorder. We considered any 30-day DSM-IV mental disorder detected in this ICD-10 pure somatic subgroup as being under-recognized.

*Under-treatment*

Questions about treatment were included at the end of each CIDI diagnostic section, except for the section posttraumatic stress disorder. Respondents meeting criteria for a DSM-IV mental disorder were asked if they ever in their life talked to a medical doctor or other health professional, about the disorder. After a positive answer, respondents were asked how old they were the first time they did so.

Over time, untreated mental disorders may become more complex and more difficult to treat [20]. For this study, we considered respondents to be under-treated when more than 3 years had elapsed between onset of the disorder and first treatment contact, or when they had never received any treatment at all.

To examine under-treatment, we assessed the probability of treatment of 12-month DSM-IV mental disorders. We have chosen for a CIDI recall period of 12 months (instead of 30 days) to minimize the risk of missing any under-treated cases. Under-treatment was assessed in two subgroups of disability claimants, with either an ICD-10 somatic or ICD-10 mental disorder as primary cause of disability, irrespective of any ICD-10 somatic or mental comorbidity as secondary or tertiary causes of disability.

*Severity*

Severity of under-treated 12-month DSM-IV mental disorders was defined according to Kessler et al. [15] in terms of impairment, disability, suicidality, positive psychosis screen and the presence of 12-month DSM-IV bipolar disorder. At the end of each diagnostic section, the CIDI includes five questions that assess impairment and disability as a consequence of the specific disorder. Four of these questions form the Sheehan Disability Scale (SDS) [21], which asks respondents to rate the impairments during the month in the past year when it was most severe in each of four areas of life: household management, work, close personal relationships and social life on a 0–10 visual analogue scale with impairment categories of none (0), mild (1–3), moderate (4–6) and serious (7–10). The fifth question asks respondents to estimate the total number of days in the past 12 months when they were totally unable to work or carry out their other usual activities because of the focal disorder. We classified cases as serious if they had any of the following: 12-month suicide attempt with serious lethality intent; serious impairment in $\geq$2 domains of the SDS; $\geq$1 positive answer in the CIDI section Psychosis Screen; prevalence of bipolar I or II disorder; $\geq$30 days out of any role in the last year. We defined cases as moderate if they had any of the following: suicide gesture, plan or ideation; negative psychosis screen; moderate role impairment in $\geq$2 domains of the SDS; <30 days out of any role in the last year. Disorders were defined as mild when criteria for serious or moderate disorders were not met.

We assessed severity of under-treated 12-month DSM-IV classified mental disorders in two subgroups of disability claimants, with either a ICD-10 somatic disorder or with a ICD-10 mental disorder as primary cause of disability, with or without any comorbid ICD-10 mental or somatic disorder as secondary or tertiary cause of disability.

### Statistical analysis

To assess external validity, i.e. the representativeness of the study sample for the national population of disability claimants in the Netherlands, we compared study data with data from the SSI [22] on gender, age, educational level and prevalence of ICD-10 defined somatic and mental disorders, using Chi-square goodness-of-fit tests to assess significant differences. DSM-IV diagnoses were made automatically, using algorithms integrated in the CIDI software. Diagnostic data obtained from the CIDI were merged from interview laptops and imported into IBM SPSS 19.0 statistics package (SPSS Inc., Chicago, IL). We calculated levels of agreement using $\kappa$ statistics for dichotomous values (Cohen's $\kappa$). $\kappa$ Values <0.40 were defined as poor, $0.41 < \kappa < 0.60$ as moderate and $\kappa > 0.60$ as good [23]. We used a confidence interval of 95% and a level of significance $p \leq 0.05$.

## Results

### Study sample description

Out of a total of 1544 eligible disability claimants, 375 persons consented to participate. The response rate was 24.3%. To assess representativeness, we compared responders ($n = 375$) with non-responders ($n = 1169$) as to age, gender and mental diagnosis certified by the SSI as cause of disability. We found no significant differences between responders and non-responders as to gender ($p = 0.850$) and classifications of somatic and mental disorder certified as cause of disability ($p = 0.682$). As to age, we found responders to be significantly older than non-responders ($p < 0.001$). Age categories 45–54 years and 55–65 years are over-presented among responders. For this study, we included only those participants, from whom we obtained complete data on diagnosis of mental disorder. As a result, the study sample consisted of 346 CIDI interviewed participants, see Figure 1 for a recruitment flowchart.

For a description of the total study sample ($n = 346$), see Table 1. The study sample comprised 174 men (50.3%). The mean age was 49.8 (range 22–64). More than 70% of respondents were older than 45 years. Educational attainment was at intermediate level for almost 70% of respondents. More than 80% of respondents lived in rural (<10 000 inhabitants) or midsize urban (10 000–100 000 inhabitants) areas.

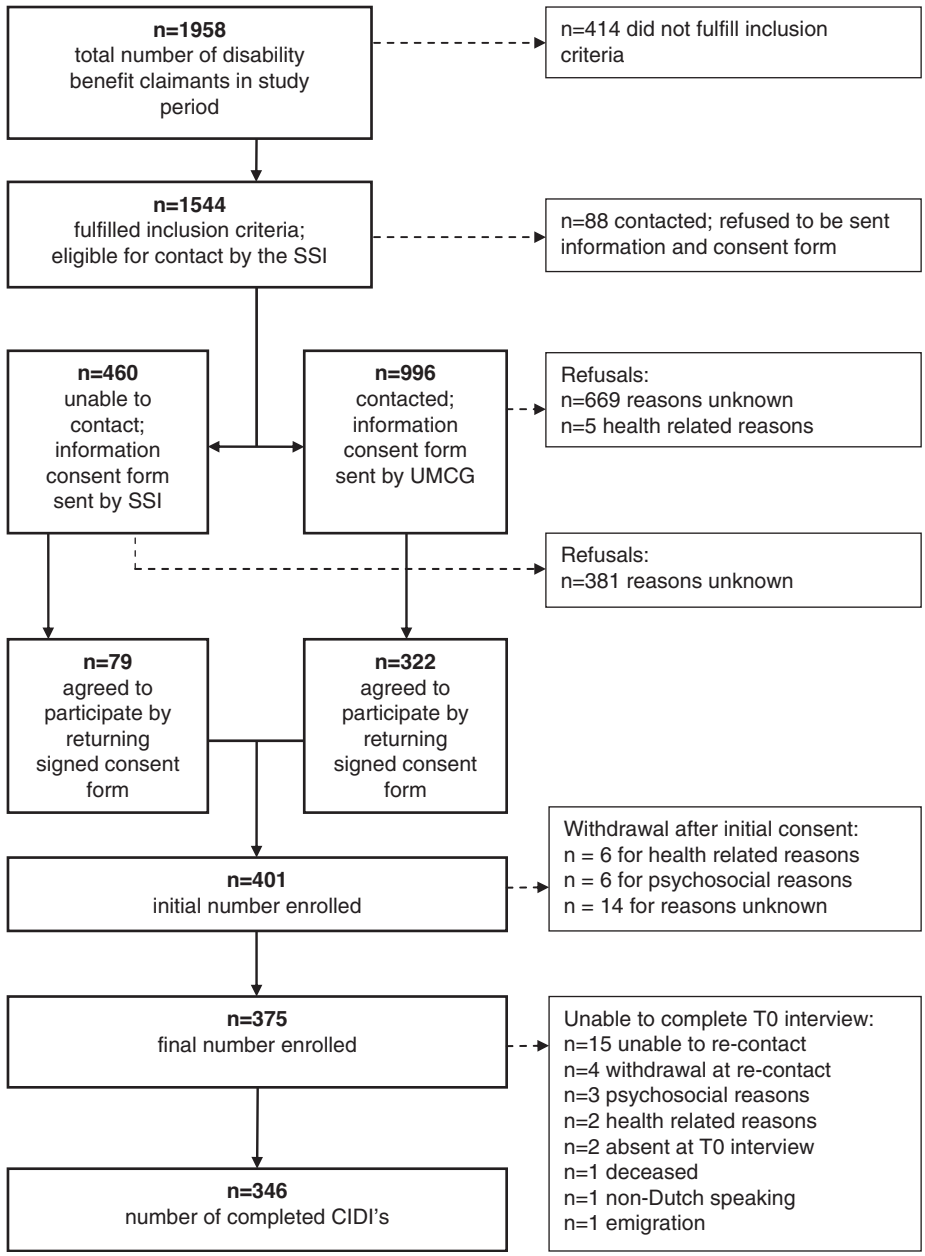
To assess external validity of the results of this study as to prevalence of somatic and mental disorders classified in the ICD-10 system as primary cause for disability, we compared the study sample with a large national population ($n = 56.267$; source: SSI) of all persons claiming disability benefit in the years 2006–2007. We found the study sample not to differ significantly from this national population as to prevalence of ICD-10 defined somatic disorders ($p = 0.876$) and mental disorders ($p = 0.344$).

To assess external validity as to demographic characteristics, we compared the study sample with a national population ($n = 166.581$; source: SSI) of all persons claiming disability benefit in the Netherlands in the years 2006–2010. We found no significant differences as to gender ($p = 0.544$). However, the study sample is significantly older ($p < 0.05$) with a higher proportion of the age range 45–65 year (71.1% for the study sample and 54.4% for the national population), and higher educated ($p < 0.05$) with a higher proportion of intermediate/higher attainment (82.0% for the study sample and 69.9% for the national population).

### Under-recognition

The sample of respondents we examined for under-recognition of recent, i.e. 30-day DSM-IV mood and anxiety disorder, consisted of 343 persons (in 3 cases, ICD-10 codes were missing). In this sample, the prevalence of any ICD-10 mood disorder as primary, secondary or tertiary cause of disability was 10.8% ($n = 37$) and of any 30-day DSM-IV mood disorder 9.5% ($n = 33$). We found

Figure 1. Flowchart of participants.






ICD-10/DSM-IV disagreement in 48 (14.0%) cases ($\kappa = 0.237$). Of 33 cases, diagnosed by the CIDI as having a 30-day DSM-IV mood disorder, 22 cases were not diagnosed by IPs in ICD-10 classification (66.6% false-negatives). Of 310 cases without 30-day DSM-IV mood disorder, IP's certified 26 cases with an ICD-10 mood disorder (8.4% false-positives). The prevalence of any ICD-10 anxiety disorder was 6.1% ($n = 21$) and of any 30-day DSM-IV anxiety disorder was 20.4% ($n = 70$). ICD-10/DSM-IV disagreement was present in 61 (17.8%) cases ($\kappa = 0.260$). Of 70 cases with an anxiety disorder as diagnosed by the CIDI, 55 cases were not detected by IPs using ICD-10 (78.6% false-negatives). Of 273 cases without 30-day DSM-IV anxiety disorder, 6 cases were diagnosed with ICD-10 anxiety disorder (2.2% false-positives).

The sample of respondents certified by IPs with a pure somatic disorder classified in ICD-10 as primary cause of disability without any ICD-10 mental comorbidity, consisted of 236 persons. The prevalence of 30-day DSM-IV classified mental disorders in this sample is shown in Table 2. The more prevalent classes of somatic disorders were musculoskeletal (55.7%), cardiovascular (18.7%) and nervous system (13.0%) (not in table). In this ICD-10 pure somatic subgroup, the prevalence of any 30-day DSM-IV classified mood disorder was 3.8% and of any 30-day anxiety disorder 11.4%. The more prevalent-specific 30-day DSM-IV classifications were major depressive disorder (3.0%), social phobia (2.1%), general anxiety disorder (3.4%) and posttraumatic stress disorder (2.5%).

## Under-treatment and severity

We examined under-treatment of 12-month DSM-IV mood and anxiety disorder in a sample of respondents classified with either any ICD-10 somatic or any ICD-10 mental disorder as primary cause of disability, irrespective of any secondary or tertiary ICD-10 classification. This sample consisted of 337 persons (in 9 cases ICD-10 codes were missing). Of this sample, 259 (76.8%) respondents were primarily classified with an ICD-10 somatic disorder, and 78 (23.2%) respondents primarily with an ICD-10 mental disorder. Table 3 shows probability of treatment of the more prevalent 12-month DSM-IV classified disorders, i.e. major

Table 1. Demographic characteristics and prevalence of ICD-10 classifications of somatic ($n = 259$) and mental ($n = 78$)[a] disorders as primary cause of disability in the total study sample ($n = 346$).

| | Total (%) |
|---|---|
| Gender | |
| Male | 174 (50.3) |
| Female | 172 (49.7) |
| Age, mean (range) | 49.8 (22–64) |
| Age categories | |
| 15–24 | 1 (0.3) |
| 25–34 | 23 (6.6) |
| 35–44 | 76 (22.0) |
| 45–54 | 121 (35.0) |
| 55–65 | 125 (36.1) |
| Educational level | |
| Low | 61 (17.6) |
| Intermediate | 235 (67.9) |
| High | 43 (12.4)[b] |
| Urbanization | |
| Rural | 116 (33.5) |
| Midsize urban | 167 (48.3) |
| Urban | 63 (18.2) |
| ICD-10 somatic | |
| Cardiovascular | 35 (10.1) |
| Musculoskeletal | 136 (39.3) |
| Nervous | 20 (5.8) |
| Respiratory | 8 (2.3) |
| Gastro-intestinal | 13 (3.8) |
| Genito-urinary | 18 (5.2) |
| Other[c] | 29 (8.5) |
| ICD-10 mental | |
| Mood | 27 (7.8) |
| Anxiety | 18 (5.2) |
| Other[d] | 33 (9.5) |

[a]We could not obtain ICD-10 mental codes in nine cases.
[b]We could not obtain educational data in seven cases.
[c]Blood/blood-forming, skin/subcutaneous, endocrine/nutritional/metabolic, ear/mastoid, eye/adnexa.
[d]Disorders not included in this study: stress-related, substance use, somatoform, personality, psychotic.

Table 2. Prevalence (%) of comorbid 30-day DSM-IV mood and anxiety disorder among respondents ($n = 246$) with a pure[a] ICD-10 somatic disorder.

| | Total (%) |
|---|---|
| Any mood disorder | 3.8 |
| Dysthymia | 1.3 |
| Major depressive disorder | 3.0 |
| Mania | 0.0 |
| Bipolar I/II disorder | 0.4 |
| Any anxiety disorder | 11.4 |
| Agoraphobia | 0.4 |
| Panic disorder | 0.8 |
| Social phobia | 2.1 |
| Obsessive compulsive disorder | 1.3 |
| General anxiety disorder | 3.4 |
| Posttraumatic stress disorder | 2.5 |

[a]Without any ICD-10 classification of mental disorder.

depressive disorder, general anxiety disorder and social phobia for these two ICD-10 somatic and mental subgroups. According to our definition of under-treatment, i.e. treatment delay of more than 3 years or no treatment at all, in the ICD-10 somatic group, 45.2% of major depressive disorder, 53.3% of general anxiety disorder and 80.0% of social phobia were under-treated.

Table 3. Treatment (%) of 12-month DSM-IV major depressive disorder (mdd), general anxiety disorder (gad) and social phobia (so) in subgroups with ICD-10[a] somatic and mental disorder as primary cause for disability[b].

| | ICD-10 somatic ($n = 259$) | | | ICD-10 mental ($n = 78$) | | |
|---|---|---|---|---|---|---|
| | $n$ | Treatment | Under-treatment | $n$ | Treatment | Under-treatment |
| 12-month DSM-IV | | | | | | |
| mdd ($n = 82$) | 42 | 44.8 | 45.2 | 40 | 55.3 | 44.7 |
| gad ($n = 36$) | 15 | 46.7 | 53.3 | 21 | 66.7 | 33.3 |
| so ($n = 36$) | 15 | 20.0 | 80.0 | 21 | 14.1 | 80.9 |

[a]We could not obtain ICD-10 codes in 9 cases.
[b]With or without any ICD-10 somatic/mental comorbidity as secondary or tertiary cause of disability.

In the ICD-10 mental group, we found 44.7% of major depressive disorder, 33.4% of general anxiety disorder and 80.9% of social phobia under-treated.

Table 4 presents the severity of under-treated 12-month DSM-IV classified disorders in these two ICD-10 subgroups. In the ICD-10 somatic subgroup, 73.7% of under-treated major depressive disorders are serious in terms of disability, i.e. SDS outcome, and 68.4% of these disorders are serious in terms of role impairment, i.e. days out of role. In this group, corresponding percentages for under-treated social phobias and general anxiety disorder are 33.3% and 75.0%, respectively, and of under-treated general anxiety disorders 62.5% and 50.0%, respectively. In the ICD-10 mental subgroup, in terms of disability and days out of role, 70.6% of under-treated major depressive disorders and 71.4% of under-treated general anxiety disorders are serious. Under-treated social phobias in this subgroup are serious in 47.1% of cases in terms of disability, and in 76.5% in terms of days out of role. Other criteria for severity were met in fewer cases. One respondent with an untreated general anxiety disorder reported having attempted suicide with lethality intent.

## Discussion

In the total study sample, the prevalence of certified ICD-10 mood disorder was slightly higher than the prevalence of 30-day DSM-IV/CIDI mood disorder: 10.7% versus 9.5%. However, level of agreement between ICD-10 and DSM-IV classified mood disorder was very poor ($\kappa = 0.237$). Differences in corresponding percentages for any anxiety disorder were more pronounced: 6.1% (ICD-10) versus 20.2% (DSM-IV), also with very poor level of agreement ($\kappa = 0.260$). For both classes of mental disorder, we found a high number of false-negative and a low number of false-positive ICD-10 classifications. These findings suggest substantial under-recognition of recent mood and anxiety disorders among disability claimants and confirm results of recent research in a comparable population [13].

The CIDI we used in this study generates both DSM-IV and ICD-10 classifications of mental disorder. However, we used the DSM-IV classification system, because this system is the *de facto* standard in psychiatric research. This enabled us to compare our results with those found in other populations. However, by comparing DSM-IV with ICD-10, differences between prevalence of DSM-IV and ICD-10 classified mental disorder may be based on different definitions of mental disorder in the DSM-IV and ICD-10 system [24]. It has been documented that in the ICD-10, thresholds for mental disorder are lower than in the DSM-IV, resulting in a higher prevalence of ICD-10 classifications [25,26]. However, in this study, we found a much lower ICD-10 prevalence for any anxiety disorder. Therefore, as far as anxiety disorder is

Table 4. Severity (%) of under-treated 12-month DSM-IV major depressive disorder ($n = 36$), social phobia ($n = 29$) and general anxiety disorder ($n = 15$) in subgroups with ICD-10 somatic ($n = 259$) and mental ($n = 78$[a]) disorders as primary cause for disability[b].

| | ICD-10 | | | | | |
|---|---|---|---|---|---|---|
| | Somatic | | | Mental | | |
| | None/mild | Moderate | Serious | None/mild | Moderate | Serious |
| Major depressive disorder | | | | | | |
| Impairment | 5.3 | 21.1 | 73.7 | 5.9 | 23.5 | 70.6 |
| Disability | 15.8 | 15.8 | 68.4 | 17.6 | 11.8 | 70.6 |
| Suicidality | 78.9 | 21.1 | 0.0 | 88.2 | 11.8 | 0.0 |
| Positive psychosis screen | 94.7 | – | 5.3 | 88.2 | – | 11.8 |
| Bipolar I/II | 94.7 | – | 5.3 | 88.2 | – | 11.8 |
| Social phobia | | | | | | |
| Impairment | 25.0 | 41.7 | 33.3 | 23.5 | 29.4 | 47.1 |
| Disability | 16.7 | 8.3 | 75.0 | 11.8 | 11.8 | 76.5 |
| Suicidality | 91.7 | 8.3 | 0.0 | 76.5 | 23.5 | 0.0 |
| Positive psychosis screen | 100.0 | – | 0.0 | 64.8 | – | 35.3 |
| Bipolar I/II | 100.0 | – | 0.0 | 88.2 | – | 11.8 |
| General anxiety disorder | | | | | | |
| Impairment | 25.0 | 12.5 | 62.5 | 14.3 | 14.3 | 71.4 |
| Disability | 25.0 | 25.0 | 50.0 | 28.6 | 0.0 | 71.4 |
| Suicidality | 100.0 | 0.0 | 0.0 | 42.8 | 42.9 | 14.3 |
| Positive psychosis screen | 87.5 | – | 12.5 | 85.7 | – | 14.3 |
| Bipolar I/II | 100.0 | – | 0.0 | 85.7 | – | 14.3 |

[a]We could not obtain ICD-10 codes in nine cases.
[b]With or without any ICD-10 somatic/mental comorbidity as secondary or tertiary cause of disability.



concerned, the difference we found between the prevalence of DSM-IV and ICD-10 classifications cannot be explained by any classification difference.

In the subgroup with ICD-10 pure somatic disorder certified as primary cause for disability (without any ICD-10 mental comorbidity), the prevalence of comorbid 30-day DSM-IV classified mental disorder, especially anxiety disorder, was substantial. This finding may also be indicative of under-recognition of disabling co-occurring mood and anxiety disorder among disability claimants with a somatic disorder as primary cause of disability.

The comorbid 12-month DSM-IV classified mental disorders, i.e. major depressive disorder, social phobia and general anxiety disorder, both in the ICD-10 somatic and mental subgroup, were found to be predominantly serious and substantially under-treated. Since we defined under-treatment conservatively as treatment delay longer than 3 years or no treatment at all, under-treatment is probably underestimated. In general, individuals with mental illness may not seek professional help, because they do not perceive their mental health problem as serious. However, in this study, the under-treated disorders were reported by participants to be for the most part serious in terms of disability and days out of role.

Because of the cross-sectional design of this study, it remains unclear whether or not IPs have acted upon their recognition of under-treated serious mental disorder, for instance, by psychiatric consultation or by referral to specialized mental health care. However, in the ICD-10 somatic subgroup, any follow-up of serious under-treated mental disorders is unlikely, as they were largely not recognized to begin with.

Different factors may underlie the under-treatment of mental disorders that we found in this study. In studies on depression and anxiety, several barriers to treatment were identified by patient self-report: not knowing where to go for help, a preference to self-manage mental health problems, inability to afford treatment, lack of health insurance, shame, stigma, perceived lack of effectiveness of treatment and inadequate recognition by health care professionals [3,27]. In the Netherlands, protocols and guidelines for the assessment of disability due to both somatic and mental disorder have been developed by the Dutch Health Council and the Dutch Association of Insurance Medicine (NVVG) for use by IPs [28]. In these protocols, diagnosis and treatment of (comorbid) mental disorder are considered to be key aspects [29]. This study does not provide information whether or not the IPs have adhered to these protocols. However, as this study indicates that mental disorders are under-recognized, protocol adherence with regard to assessment of mental comorbidity by IPs may be suboptimal. If so, IPs did not differ from other medical professionals in primary and occupational care [30,31] as to insufficient adherence to guidelines. Indeed, in general, adherence to clinical guidelines by physicians in all kinds of settings is often suboptimal [32]. A failure to optimally adhere to guidelines by IPs in disability settings with regard to diagnosis and treatment of mental disorder may have several negative outcomes, i.e. under-recognition of need for treatment, suboptimal assessment of disability benefit claims, a longer duration of sickness absence and a longer time to return to work.

## Strengths and limitations

Our study is the first to assess under-recognition and under-treatment of DSM-IV classified disorders among persons claiming disability benefit after long-term sickness absence. It is unique in comparing reliable data on prevalence, treatment and severity of DSM-IV classified mental disorder collected with the CIDI with diagnostic data on ICD-10 somatic and mental disorders registered on disability certificates. Other strengths of this study are: the use of the latest version of the CIDI, with complete covering of potential DSM-IV classifications of mood and anxiety disorders; the employment of well-trained interviewers, whose interviewing techniques were frequently evaluated and controlled; the representativeness of the sample for the population of disability claimants in the Netherlands as to diagnostic classification, allowing results to be generalized to much larger populations.

However, several limitations must be taken into account as well. First, a potential limitation is the response rate of 24.3%.

There may have been several reasons for this low response. It may be due to the stepped informed consent procedure, necessary to guarantee complete confidentiality and to prevent uninformed data flow between the researchers and the SSI. The same consent procedure was used in another Dutch study on mental health problems among long-term, work-disabled persons [13]. The response rate in that study was comparably low: 25.8%. The low response rate in this study may also be related to the comprehensiveness of our measures, i.e. a lengthy psychiatric interview (CIDI). This may have kept eligible participants from giving consent. The low response rate in this study may have resulted in selection bias in different ways. In general, persons suffering from mental illness might be less inclined to participate in surveys on mental health [19]. This could have led to lower prevalence of mental disorders in the study sample. We found respondents to be significantly older as compared with both non-responders and with a national Dutch population of disability claimants. In general, poor mental health is prevalent at all ages with the highest prevalence occurring in the youngest age groups [33]. Prevalence rates of mental disorders found in the present study may therefore be an under-estimation. We also found respondents to be significantly higher educated as compared with a national Dutch population of disability claimants. It is difficult to estimate whether this has led to selection bias as to prevalence of mental disorder, since the association of level of education with prevalence rate of mental disorder is not clear [34]. It is generally assumed that higher prevalence is found among lower educated persons [33]. Therefore, the prevalence of mental disorder in the study sample may also have been underestimated due to the over-inclusion of higher-educated respondents. However, selection bias is not likely, because we found no significant difference as to the prevalence of most frequent mental disorders found among disability claimants, i.e. mood, anxiety and stress-related disorders, diagnosed by the IPs in the study sample as compared to the national population of disability claimants. Second, the power of our ICD-10 somatic and mental subgroup analyses is limited due to small sample sizes. Results of these analyses should therefore be interpreted with caution. Third, the cross-sectional design of this study does not allow any assessment of causal relationships.

## Conclusion

Using the CIDI, we found DSM-IV classified mood and anxiety disorders to be substantially under-recognized and under-treated among disability claimants. Under-treated 12-month DSM-IV mental disorders were found to be predominantly serious in terms of disability and days out of role. Further studies are needed to confirm these findings and to help develop interventions to prevent negative consequences of under-recognition and under-treatment of mental disorders in this vulnerable population.

Professionals in primary and occupational healthcare are challenged to distinguish between mild self-limiting mental health problems and more severe mental disorders with a high risk of disability if untreated. IPs and other medical professionals involved in disability assessment should be aware of substantial under-treatment of serious mood and anxiety disorder among disability claimants. These professionals should closely follow their professional guidelines to prevent negative outcomes of under-recognition and under-treatment. Once mental disorder has been recognized and under-treatment has been ascertained, IPs should closely collaborate with professionals in primary, secondary and occupational mental health care to promote effective treatment and interventions aimed at health improvement, occupational rehabilitation, return to work and prevention of permanent disability. Future studies should target ways how this collaboration can be best organized.

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## Declaration of interest

The authors report no declarations of interest.

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